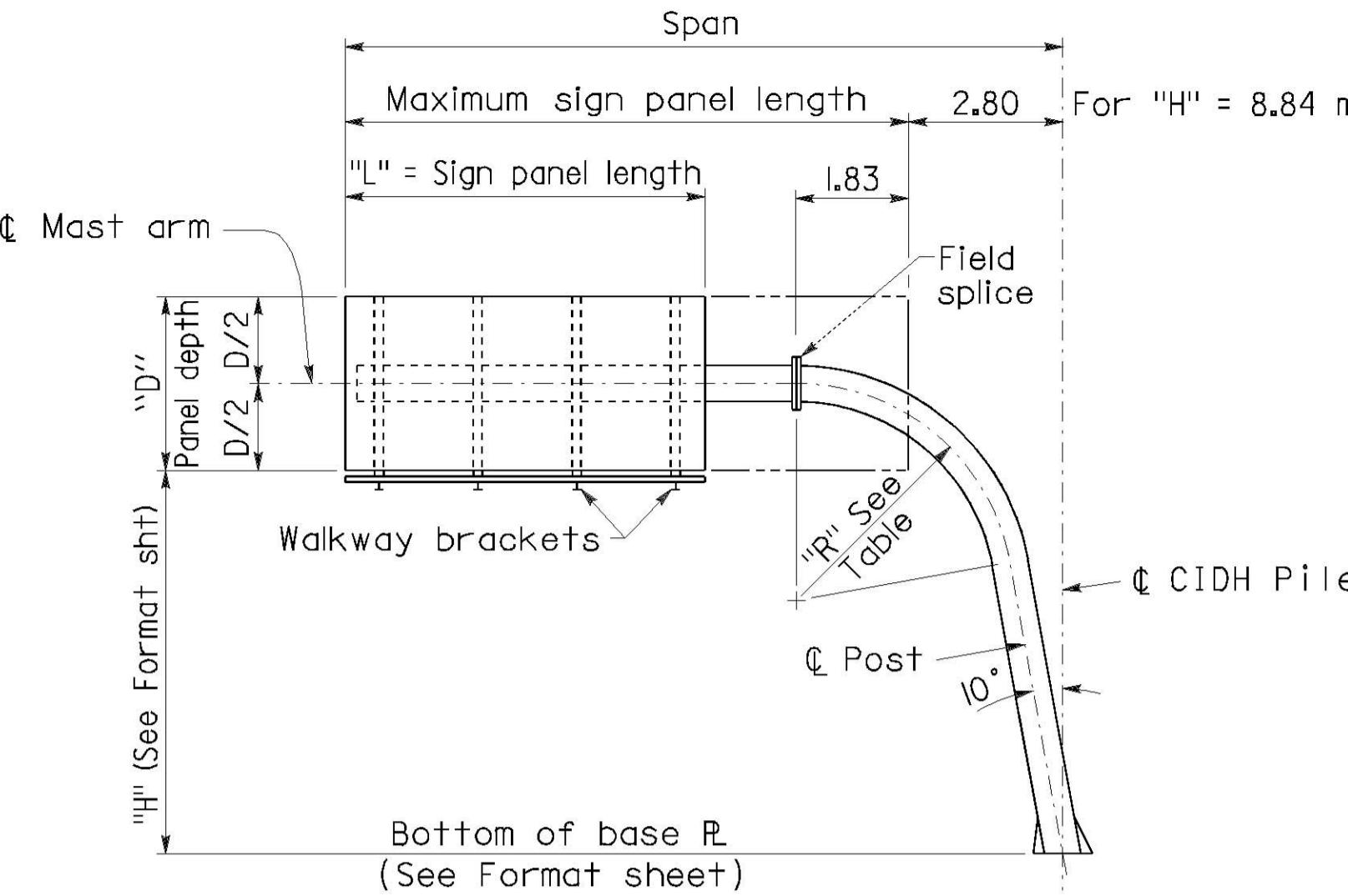


DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
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REGISTERED PROFESSIONAL ENGINEER
No. _____
Exp. _____
CIVIL
STATE OF CALIFORNIA

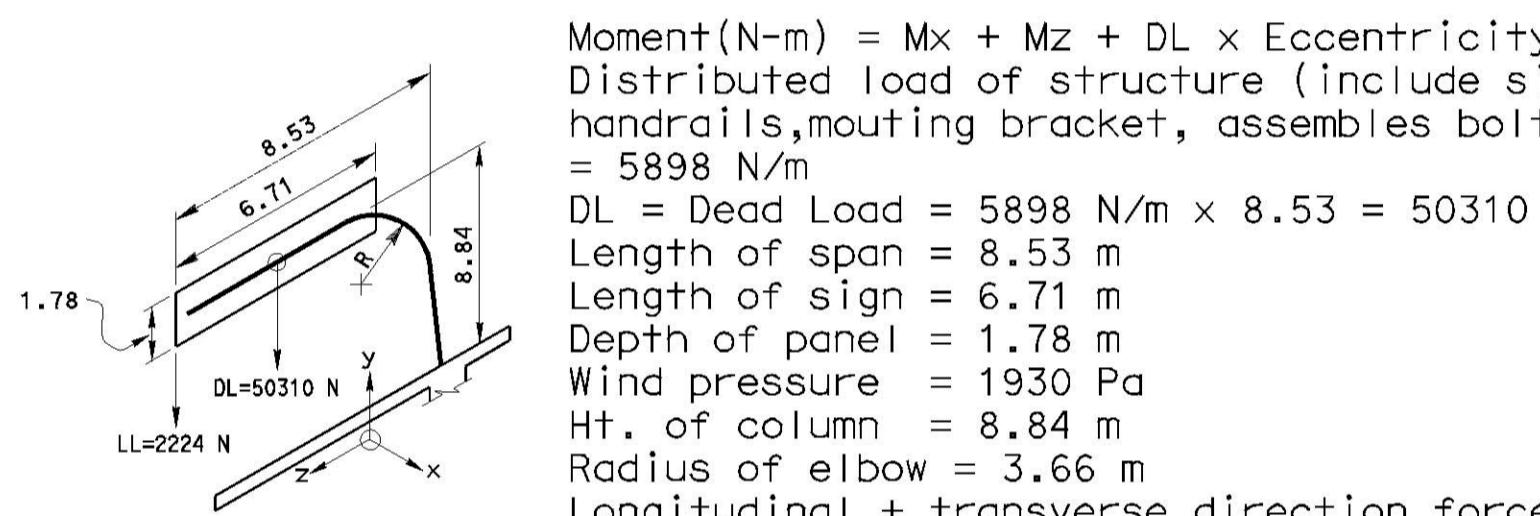
PLANS APPROVAL DATE
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



SLANTED POST CANTILEVER

EXAMPLE 1:

Column selection for vertical pipe & pipe beam (include the selection of the inclined pipe post @ 10 degrees), definition of the span length is from support to end of sign. Area of coverage of sign is 1.83 m beyond field splice to the right and measure to the end of sign at the left x panel depth. (See above drawing)

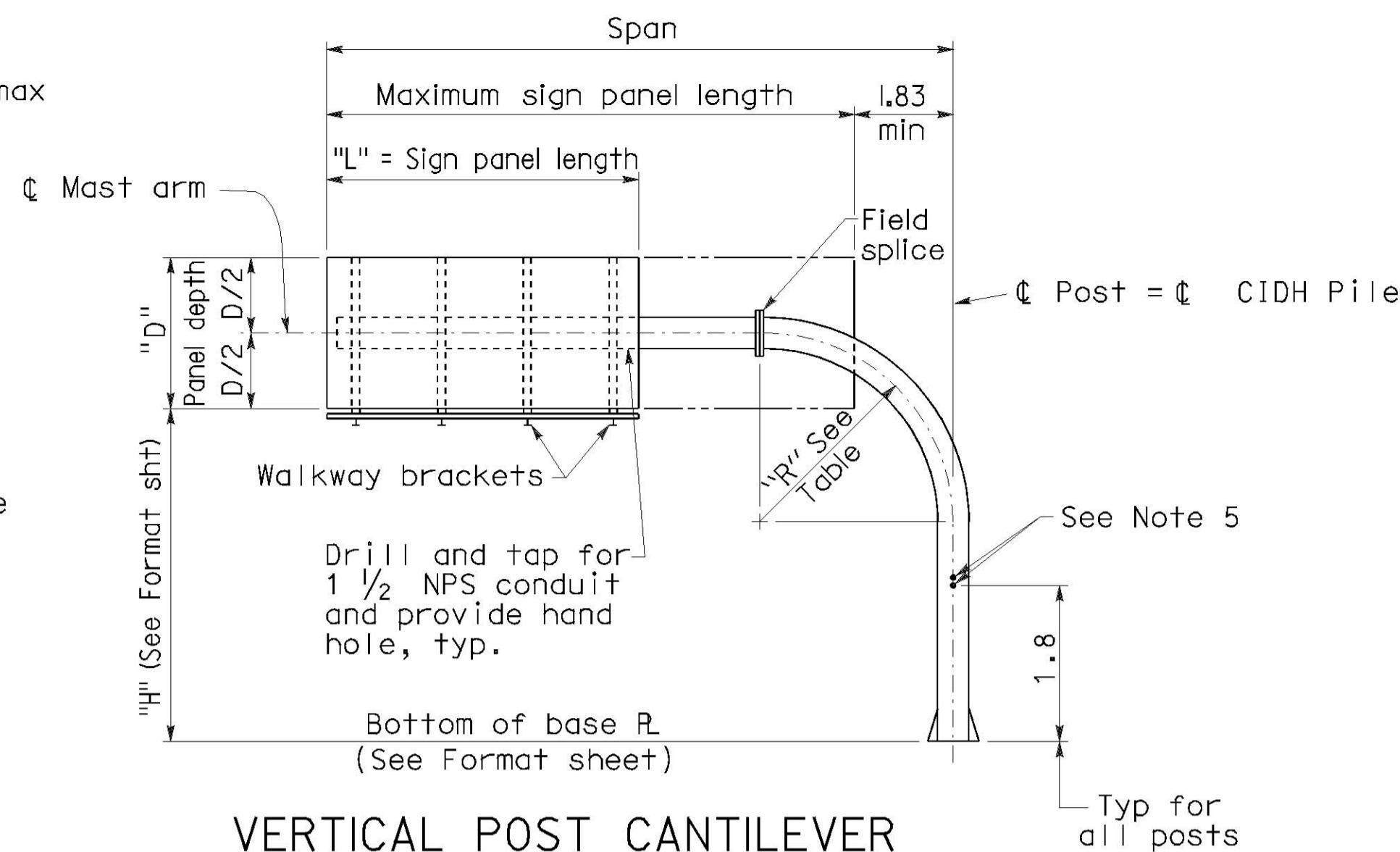


Moment at base of column (with 20% include for lateral effects)
= $M_x + M_z$, (Due to wind)
= L of sign x depth of panel x wind pressure x Ht of sign x 1.2
= $6.71 \times 1.78 \times 1930 \times 8.84 \times 1.2 = 244531$ N-m
DL x ecc = $50310 \times 5.18 = 260605$ N-m
LL x arm length = $2224 \times 8.53 = 18971$ N-m
TOTAL MOMENT = 529622 N-m

The post type # is	Column shape	Radius, m
III	pipe NPS 24 x 15.9 tk, no split	3.66

Reactions are approx as below after pipe size is known:
(Neglecting wind effect on the exposed portion of pipe)

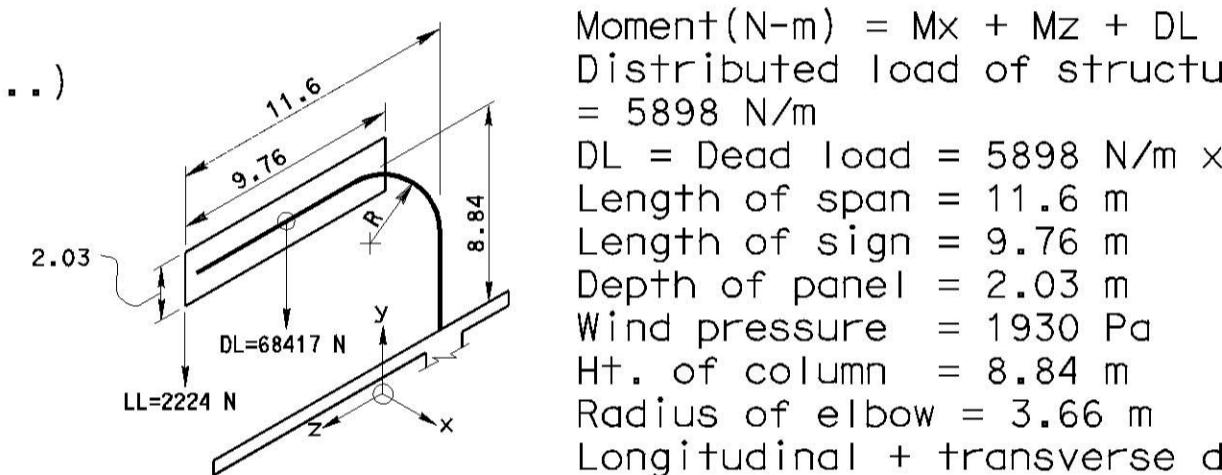
$$\begin{aligned}
 F_x &= 6.71 \times 1.78 \times 1930 = 23052 \text{ N} \\
 F_y &= \text{Wt of pipe (See vertical post quantities)} + \text{Beam portion} + (\text{Wt of sign} + \text{walkway} + \text{HR}) \\
 &= \{24937 \text{ N} + [(8.53 - 3.66) \times 1381] + \{(5898 - 1381) \times 6.71\} \\
 &= 61972 \text{ N} \\
 F_z &= 6.71 \times 1.78 \times 1930 \times 0.2 = 4610 \text{ N} \\
 M_x &= \text{Wind (20\%)} + \text{DL x Eccentricity} + \text{LL x Arm length} \\
 &= (6.71 \times 1.78 \times 1930 \times 8.84 \times 0.2) + 50310 \times 5.18 + 2224 \times 8.53 \\
 &= 40755 + 260606 + 18971 = 320332 \text{ N-m} \\
 M_y &= (8.53 - 6.71/2) \times 6.71 \times 1.78 \times 1930 = 119292 \text{ N-m} \\
 M_z &= 6.71 \times 1.78 \times 1930 \times 8.84 = 203776 \text{ N-m}
 \end{aligned}$$



VERTICAL POST CANTILEVER

EXAMPLE 2:

Column selection for vertical pipe & pipe beam (include the selection of the inclined pipe post @ 10 degrees), definition of the span length is from support to the end of sign. Area of coverage of sign is 1.83 m from ℓ of pile to end of sign x panel depth. (See above drawing)



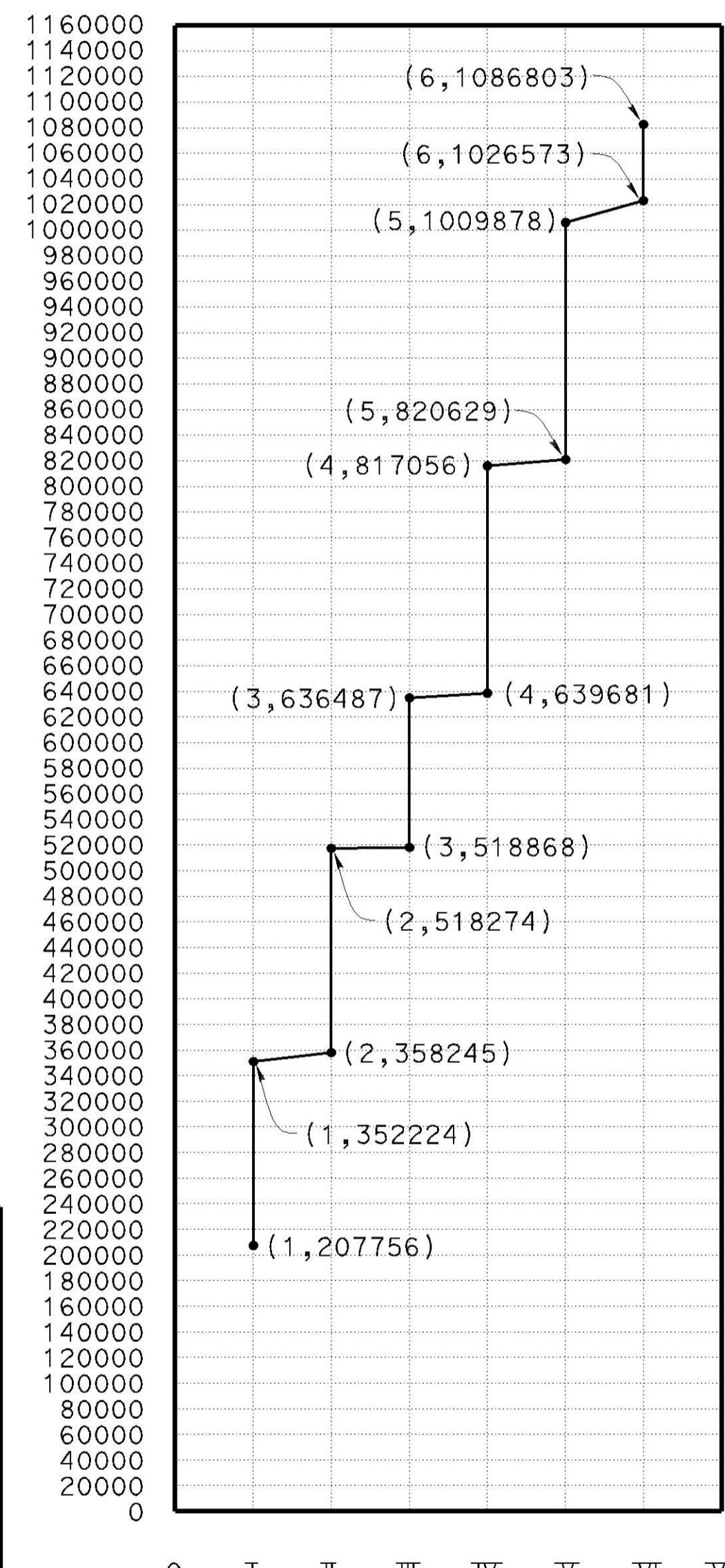
Moment at base of column (with 20% include for lateral effects)
= $M_x + M_z$, (Due to wind)
= L of sign x depth of panel x wind pressure x Ht of sign x 1.2
= $9.76 \times 2.03 \times 1930 \times 8.84 \times 1.2 = 405636$ N-m
DL x ecc = $68417 \times 6.72 = 459762$ N-m
LL x arm length = $2224 \times 11.6 = 25798$ N-m
TOTAL MOMENT = 891196 N-m

The post type # is	Column shape	Radius, m
V	pipe NPS 30 x 15.9 tk, no split	3.66

Notes:

1. The maximum sign panel overlap onto the post elbow shall be 1.83 m max from the field splice.
2. When several sign panels are to be installed with a space between the panels, the space shall be as small as possible and 610 mm maximum.
3. During sign erection the post shall be raked as necessary with the use of the leveling nuts to make the sign panel level.
4. At final position of post all top and bottom anchor bolt nuts shall be wrench tightened against base plate.
5. Drill and tap for 1 1/2 NPS chase nipples and plug with recessed pipe plus. Place perpendicular to sign panel axis and away from approaching traffic. See Std Plan ES-15C.
6. NPS - Nominal Pipe Size.
7. Use of distributed dead load of 5898 N/m (worst load) on span is for post sizing only and not for quantity take off. This distributed dead load is assumed to act at the center line of the sign. Distributed dead load can varies from 3910 N/m to 5898 N/m for different post size of pipe NPS 20 to pipe NPS 30 diameter.
8. Post type # in Roman or Numerical implies the same specification of pipe post.

MOMENT, N-m



POST TYPE #

THIS SHEET NOT A PART
OF CONTRACT PLANS

OVERHEAD SIGNS - TUBULAR
SINGLE POST TYPE

LAYOUT AND PIPE SELECTION

NO SCALE

ALL DIMENSIONS ARE IN
METER UNLESS OTHERWISE SHOWN